Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-32 (canceled).

33. (new) An optical filter comprising:

a multi-layer, thin film interference filter that includes at least one layer made of a semiconductor material having a thermo-optic coefficient sufficiently large to cause the optical filter to function as a thermally tunable bandpass filter.

34. (new) The optical filter of claim 33 further comprising a heater element that is arranged to heat said at least one layer made of a semiconductor material.

35. (new) The optical filter of claim 34 wherein the heater element is a thin film layer within the thin-film interference filter.

36. (new) The optical filter of claim 34 wherein the heater element comprises an electrically conductive layer which heats up in response to an electrical current being passed through it

37. (new) The optical filter of claim 36 wherein said electrically conductive layer comprises ZnO.

38. (new) The optical filter of claim 34 wherein the heater element is an optically-absorbing layer that during use is heated by an optical signal.

39. (new) The optical filter of claim 33 wherein the interference filter includes a stack of thin film layers having refractive indices that alternate in value from one layer to the next and wherein said at least one semiconductor layer is among said multiple layers in the stack.

40. (new) The optical filter of claim 33 wherein the semiconductor material is amorphous silicon.

41. (new) The optical filter of claim 40 wherein the amorphous silicon is infused with hydrogen.

42. (new) The optical filter of claim 33 wherein the interference filter comprises alternating thin film layers of silicon and silicon nitride

43. (new) The optical filter of claim 33 wherein the layers of the multi-layer, thin film interference filter are formed by PECVD.

44. (new) The optical filter of claim 33 wherein the thermo-optic coefficient of said semiconductor material is at least about $3.6 \times 10^{-4}/°C$.

45. (new) The optical filter of claim 33 being a Fabry-Perot cavity structure comprising:
a first mirror which is the first-mentioned multi-layer thin film interference filter;
a second mirror which as another multi-layer thin film interference filter; and
a spacer layer separating the first and second mirrors.

46. (new) The optical filter of claim 45 further comprising a heater element that is arranged to heat said at least one layer made of a semiconductor material.

47. (new) An optical filter comprising:

a multi-layer, thin film interference filter and including at least one layer made of a semiconductor material having a thermo-optic coefficient that is sufficiently large to cause the optical filter to function as a thermally tunable filter; and

a heater element that is arranged to heat said at least one layer made of said semiconductor material so as to vary in a controllable way the filter characteristics of the optical filter.

48. (new) An optical filter comprising a Fabry-Perot cavity structure, said Fabry-Perot cavity structure comprising:

a first multi-layer thin film interference filter that forms a first mirror;

a second multi-layer thin film interference filter that forms a second mirror; and

a spacer layer separating the first and second mirrors, wherein said Fabry-Perot cavity structure includes at least one layer made of a semiconductor material having a thermo-optic coefficient that is sufficiently large to cause the optical filter to function as a thermally tunable bandpass filter, wherein at least one the spacer layer and the first and second mirrors includes a layer made of a semiconductor material having a thermo-optic coefficient that is sufficiently large so that the optical filter functions as a thermally tunable bandpass filter.

49. (new) The optical filter of claim 48 wherein the spacer layer is made of said semiconductor material.

50. (new) The optical filter of claim 48 wherein the first mirror includes said at least one layer of semiconductor material.

51. (new) The optical filter of claim 48 further comprising a heater element that is arranged to heat said at least one layer made of said semiconductor material so as to vary in a controllable way the filter characteristics of the optical filter.

52. (new) An optical filter comprising a multi-layer, thin film interference filter and including at least one optically transmissive layer made of a material that has a thermo-optic coefficient that is substantially larger than the thermo-optic coefficient of sio_2.

53. (new) An optical filter comprising a multi-layer, thin film interference filter and including at least one layer made of a material that has a thermo-optic coefficient causing the optical filter to be tunable over a range of wavelengths extending from about 1528 nm to about 1561 when the optical filter is heated.

54. (new) An optical filter comprising a multi-layer, thin film interference filter and including at least one optically transmissive layer made of a material that has a thermo-optic coefficient that is at least as large as about $1.8X10^{-4}/°K$.

55. (new) A method of manufacturing a multi-layer, thin film interference filter comprising:

depositing on a substrate at least one layer made of a semiconductor material having a thermo-optic coefficient that is sufficiently large to cause the filter to function as a thermally tunable bandpass filter.

56. (new) The method of claim 55 further comprising:

arranging a heater element to heat said at least one layer made of a semiconductor material.

57. (new) The method of claim 56 further comprising:

arranging a thin film layer within the thin-film interference filter to be the heater element.

58. (new) The method of claim 56 further comprising:

arranging an optically-absorbing layer that during use is heated by an optical signal to be the heater element.

59. (new) The method of claim 55 wherein the thermo-optic coefficient of said semiconductor material is at least about $3.6 \times 10^{-4}/°C$.